

WHAT IS CLAIMED IS:

1. A liquid crystal display (LCD) device comprising:
 - a first substrate defined by first and second regions;
 - a storage capacitor electrode and a gate electrode respectively formed in the first and second regions of the first substrate;
 - a gate insulating layer formed on an entire surface of the first substrate so that the first region is thinner than the second region;
 - a semiconductor layer and source and drain electrodes deposited on the gate insulating layer of the second region;
 - a conductive layer formed on the gate insulating layer of the first region;
 - a pixel electrode electrically connected to the drain electrode and the conductive layer;
 - a second substrate opposite to the first substrate; and
 - a liquid crystal layer formed between the first and second substrates.
2. The LCD device as claimed in claim 1, wherein the gate insulating layer of the first region is a single-layered film, and the gate insulating layer of the second region is a double-layered film.
3. The LCD device as claimed in claim 2, wherein the gate insulating layer of the first region has a thickness in a range of about 100Å~4000Å.
4. The LCD device as claimed in claim 1, wherein the first region is a storage capacitor region, and the second region is a thin film transistor region.

5. The LCD device as claimed in claim 1, wherein the second substrate further includes:

a plurality of color filter patterns for displaying colors;

a black matrix for dividing the respective color filter patterns and for shielding light;

and

a common electrode for applying a voltage to the liquid crystal layer.

6. A method for manufacturing a liquid crystal display (LCD) device comprising:

preparing a first substrate defined by first and second regions;

forming a storage capacitor electrode in the first region of the first substrate;

forming a gate electrode in the second region;

forming a gate insulating layer on an entire surface of the first substrate so that the first region is thinner than the second region;

forming a semiconductor layer and source and drain electrodes on the gate insulating layer of the second region;

forming a conductive layer on the gate insulating layer of the first region;

forming a pixel electrode electrically connected to the drain electrode and the conductive layer; and

forming a liquid crystal layer between the first and second substrates opposite to each other.

7. The method as claimed in claim 6, further comprising forming a gate line simultaneously at the time of forming the gate electrode and the storage capacitor electrode, and forming a data line simultaneously at the time of forming the source and drain electrodes.

8. The method as claimed in claim 6, further comprising forming a plurality of color filter patterns, a black matrix, and a common electrode on the second substrate.

9. The method as claimed in claim 8, wherein before forming the common electrode, an over coat layer is formed to protect and planarize the color filter patterns.

10. The method as claimed in claim 6, wherein forming the gate insulating layer includes:

forming a first insulating layer on the first substrate including the gate electrode and the storage capacitor electrode;

exposing an upper portion of the storage capacitor electrode; and

forming a second insulating layer on the first insulating layer including the upper portion of the exposed storage capacitor electrode.

11. The method as claimed in claim 6, wherein forming the gate insulating layer includes:

forming a first insulating layer on an entire surface of the gate electrode and the storage capacitor electrode; and

etching the first insulating layer above the storage capacitor electrode at a predetermined depth.

12. The method as claimed in claim 10, wherein the second insulating layer has a thickness in a range of about 100Å~4000Å.



13. The method as claimed in claim 8, wherein the first insulating layer above the storage capacitor electrode has a thickness of about 4000Å or below by controlling its etching speed.

14. A liquid crystal display (LCD) device comprising:
a gate line and a data line arranged to cross each other and to define a pixel region;
a thin film transistor formed on a crossing region of the gate line and the data line;
a pixel electrode formed in the pixel region; and
a storage capacitor formed by an overlap between the pixel electrode and a gate line adjacent to the pixel electrode.

15. A liquid crystal display (LCD) device comprising:
a first substrate;
a second substrate;
a liquid crystal layer formed between the first and second substrates;
a storage capacitor formed in a first region of the first substrate;
a thin film transistor formed in a second region of the first substrate.
a gate electrode for the thin film transistor and a storage capacitor electrode spaced apart from the gate electrode, both formed on the first substrate;
a first insulating layer formed on an entire surface of the first substrate except an upper portion of the storage capacitor electrode;

a second insulating layer formed on the first insulating layer and the storage capacitor electrode.

16. The liquid crystal display device as claimed in claim 15, wherein the second insulating layer has a thickness in a range of about $100\text{\AA}\sim 4000\text{\AA}$.

17. The liquid crystal display device as claimed in claim 15, further comprising a semiconductor layer formed above the second insulating layer in the second region and used as a channel of the thin film transistor.

18. The liquid crystal display device as claimed in claim 15, further comprising a source electrode and a drain electrode opposing each other and formed above the semiconductor layer.

19. The liquid crystal display device as claimed in claim 15, further comprising a conductive layer of the same material as the source and drain electrodes and formed on the second insulating layer in the first region.

20. The liquid crystal display device as claimed in claim 15, further comprising an ohmic contact layer formed at an interface between the source and drain electrodes and the semiconductor layer.

21. The liquid crystal display device as claimed in claim 15, further comprising a passivation layer having a contact hole and formed on an entire surface including the

conductive layer and the source and drain electrodes to expose upper portions of the drain electrode and the conductive layer .

22. The liquid crystal display device as claimed in claim 21, further comprising a pixel electrode electrically connected to the drain electrode and the conductive layer through the contact hole.

23. The liquid crystal display device as claimed in claim 15, further comprising a plurality of Red (R), green (G), and blue (B) color filter patterns formed on the second substrate opposite to the first substrate.

24. The liquid crystal display device as claimed in claim 23, further comprising a black matrix of a light-shielding film for preventing light from being transmitted to a region other than the pixel electrode and formed on the first substrate and formed among the color filter patterns.

25. The liquid crystal display device as claimed in claim 24, further comprising a common electrode for applying a voltage to a liquid crystal layer and formed on the entire surface including the black matrix and the color filter patterns.

26. The liquid crystal display device of claim 15, wherein the first insulating layer and the second insulating layer are deposited on the second region where the thin film transistor is formed, and only the second insulating layer is formed on the first region where the storage capacitor is formed.

27. A method for manufacturing a liquid crystal display device comprising:

forming a metal having a low resistance from one of Al, Cr, Cu, Mo, and Al alloy on a first substrate by a sputtering method;

forming a gate line, a gate electrode, and a storage capacitor electrode spaced apart from the gate electrode on the first substrate by patterning the metal;

forming a first insulating layer on the entire surface of the first substrate including the gate electrode and the storage capacitor electrode;

depositing a photoresist material on the first insulating layer;

removing the first insulating layer above the storage capacitor electrode by a patterning process by exposure and developing processes to expose the first insulating layer on the storage capacitor electrode;

etching the first insulating layer by an etching process using the patterned photoresist material as a mask to expose an upper portion of the storage capacitor electrode; and

forming a second insulator layer on the entire surface of the first substrate including the first insulator layer.

28. The method for manufacturing a liquid crystal display device of claim 27, wherein the patterning process includes photo-lithography.

29. The method for manufacturing a liquid crystal display device of claim 27, wherein the second insulating layer is formed with a thickness in a range of about 100Å ~4000Å on the first insulating layer including the exposed storage capacitor electrode.

30. The method for manufacturing a liquid crystal display device of claim 27, further comprising forming a semiconductor layer, an ohmic contact layer, and source and drain electrodes on the second insulating layer of the second region.

31. The method for manufacturing a liquid crystal display device of claim 30, further comprising forming a conductive layer of the same material as the source and drain electrodes on the second insulating layer of the first region .

32. The method for manufacturing a liquid crystal display device of claim 31, further comprising:

forming a passivation layer on the entire surface of the first substrate including the conductive layer and the source and drain electrodes; and

forming a contact hole to expose the drain electrode and the conductive layer by a photo-etching process.



33. The method for manufacturing a liquid crystal display device of claim 32, further comprising forming a pixel electrode electrically connected to the drain electrode and the conductive layer through the contact hole.

34. The method for manufacturing a liquid crystal display device of claim 27, further comprising forming a liquid crystal layer between the first substrate and a second substrate formed opposite to the first substrate.

35. The method for manufacturing a liquid crystal display device of claim 34, further comprising forming Red (R), green (G), and blue (B) color filter patterns for displaying colors, a black matrix for dividing the respective color filter patterns and preventing light from being transmitted, and a common electrode for applying a voltage into the liquid crystal, on the second substrate.

36. The method for manufacturing a liquid crystal display device of claim 35, wherein the black matrix is formed of a metal thin film of one of Cr, a carbon-based organic material, a double-layered structure with Cr and CrO, and a three-layered film structure where another CrO is interposed between Cr and CrO .



37. The method for manufacturing a liquid crystal display device of claim 36, wherein after forming the black matrix , the color filter patterns for displaying colors are formed using a photo-process.

38. The method for manufacturing a liquid crystal display device of claim 35, wherein, the Red (R), green (G), and blue (B) color filter patterns are formed by shifting one mask.

39. The method for manufacturing a liquid crystal display device of claim 35, wherein the common electrode is formed from a transparent electrode material by a sputtering method.

40. The method for manufacturing a liquid crystal display device of claim 38, wherein the transparent electrode includes indium tin oxide.

41. The method for manufacturing a liquid crystal display device 35, wherein before forming the common electrode, an over coat layer is formed from one of acryl based resin and polyimide based resin to protect and planarize the color filter patterns .